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Received - 2021-09-30 05:47:15 PM
Control Number - 52373
ItemNumber - 172

PROJECT NO. 52373

**REVIEW OF WHOLESALE
ELECTRIC MARKET DESIGN**

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**PUBLIC UTILITY COMMISSION
OF TEXAS**

COMMENTS OF TOM “SMITTY” SMITH OF TxETRA

Executive Summary

September 30, 2021

The Texas Electric Transportation Resources Alliance (TxETRA) is a Texas policy group comprised of utilities, charging companies, manufacturers, researchers, and consumer and environmental groups that work together to accelerate the deployment of electric vehicles.

Managing electric load should be among the first tools to ensure grid reliability as it is highly dispatchable and is generally a low cost resource. Electric vehicle (EV) batteries, interconnected through smart chargers, can be tools for managing load, increasing reliability, and shifting peak. In order to convince EV owners and EV charging station hosts to invest in interconnected smart chargers, Texas needs to establish a market for the energy stored in EVs.

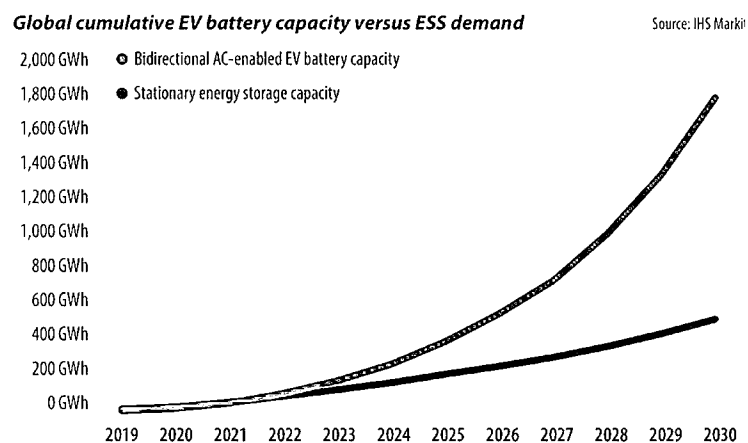
IHS Markit notes Vehicle-to-grid (V2G) storage could operate at a scale 4 ½ times greater than the current and projected stationary storage by 2030. **V2G is inherently a long duration (10-plus hours) asset. For these reasons, it is perfectly placed to provide long-duration balancing services at the intraday scale and play a large potential role in stabilizing wholesale markets under higher penetrations of renewable energy and in emergencies.**

Fundamentally, what is missing is direction from the Commission to include EVs in various programs such frequency regulation; non spin reserves; synchronous reserves; dispersed energy storage; harmonics; reactive power and black start capabilities.¹

¹ Adrene Briones et al, Vehicle-to-Grid (V2G) Power Flow Regulations and Building Codes Review by the AVTA, September 2012, https://www.energy.gov/sites/prod/files/2014/02/f8/v2g_power_flow_rpt.pdf

Electric vehicles can be deployed to meet system needs in emergency situations, to routinely offset peaks on hot days or cold mornings or to provide grid stability. This value can be delivered to the ERCOT market for the benefit of consumers if their responses are coordinated, valued, and compensated. The bi-directional charging and discharging capabilities (V2G) of electric vehicles for backup power and to reduce peak demand can have significant positive impact on the resiliency and stability of the grid. As an example, Ford is running advertisements during football games showing images of the F-150 Lightning powering a home during an outage. Ford CEO Jim Farley said recently: “One of the most popular features of the F-150 Lightning is the fact that you can power your house for three days... so people are looking at the vehicles not just for propulsion but for so many other benefits like electrifying a job site or powering your house, and the demand for this was really accelerated after what happened in Texas.”²

Eight months ago, the IHS Markit Grid-Connected Energy Storage Market Tracker’s bi-annual evaluation of the energy storage industry predicted that the industry would double in size in 2021, with installations topping 10 GW for the first time. Vehicle-to-grid (V2G) could operate at a scale that eclipses the current and projected stationary storage market.



The cost at which this EV related storage capacity could be deployed is, potentially, significantly lower than using separate stationary batteries, as is becoming increasingly common

² Jim Farley & Mary Nichol, Columbia Energy Exchange Podcast, September 28, 2021, <https://www.energypolicy.columbia.edu/road-ahead-electric-vehicle-market>

in a range of sectors today. The reason behind this is relatively simple: the capital cost of procuring the storage asset is met by the vehicle owner and is separate from its role as a grid asset.

“With significantly lower capital requirements and potentially larger scale, the use case of V2G assets is likely to be different to that of stationary storage. As domestic EV chargers are typically 7 kW, and EV battery capacity is 50 kWh to 70 kWh, **V2G is inherently a long duration (10-plus hours) asset. The lower cost will enable V2G assets to be profitable on wholesale electricity markets over a narrower price spread than traditional stationary storage assets. For these reasons, it is perfectly placed to provide long-duration balancing services at the intraday scale and play a large potential role in stabilizing wholesale markets under higher penetrations of renewable energy.**”³ *Given the right market structure in which value is compensated, V2G will help integrate variable renewables through load shifting, both by reducing peaks and by filling valleys, using the cheapest energy during the night and deploying during times of scarcity and high prices.*

Electric vehicles can provide a variety of products, including: frequency regulation; non spin reserves; synchronous reserves; dispersed energy storage; harmonics; reactive power and black start capabilities.⁴

UBS has recently said “We believe the transportation sector can be almost fully decarbonized by 2040. Our forecast is that electric vehicles will account for 40% of global new car sales by 2030.”⁵ In docket 49125, TxETRA estimated that electric vehicle sales could hit 40% of the market in Texas and ERCOT proposed a scenario that EVs could be there could be as many as 3.8 million vehicles or 15% of the fleet by 2030. 80% of the EV batteries that are removed from use in EVs are repackaged and reused as battery storage devices; those batteries are projected to last an additional 10 years in stationary source applications.

³ George Hilton IHS Markit, Vehicle to Grid Inches Closer to Reality, But Barriers Remain, August 10, 2021, <https://pv-magazine-usa.com/2021/08/10/vehicle-to-grid-inches-closer-to-reality-but-barriers-remain/>

⁴ Adrene Briones et al, Vehicle-to-Grid (V2G) Power Flow Regulations and Building Codes Review by the AVTA, September 2012, https://www.energy.gov/sites/prod/files/2014/02/f8/v2g_power_flow_rpt.pdf

⁵ Céline Fornaro and Patrick Hummel, UBS Global Research, Electric Transport Adoption Sooner Than Expected, <https://www.ubs.com/global/en/collections/sustainable-investing/latest/2021/trends-electric-transport.html>

The key regulatory features identified in the literature as strong influencers of V2G viability are market recognition of demand-side response measures, clarity in the roles of market participants, and dynamic pricing.⁶

Fundamentally, what is missing is direction from the Commission to include EVs in various programs. Once that is established, rules authorizing a value stream that rewards EV owners for the added capital costs of interconnection, interruption of service and TDUs or other market participants for participating in demand reduction programs utilizing EVs can be developed. 16 TAC25. 181 Sec 5 can easily be modified to include EVs and their batteries in the load control programs, time of use pricing or market transformation programs.

Conclusion

TxETRA appreciates the opportunity to provide these Comments and looks forward to working with the Commission and other interested parties on these issues.

Respectfully submitted,

A handwritten signature in black ink that reads "Tom 'Smitty' Smith". The signature is written in a cursive, slightly slanted style.

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⁶ Laura Jones, Kathryn Lucas-Healey, Björn Sturmborg, Hugo Temby and Monirul Islam, The A to Z of V2G A comprehensive analysis of vehicle-to-grid technology worldwide, January 2021, <https://apo.org.au/node/311127>

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